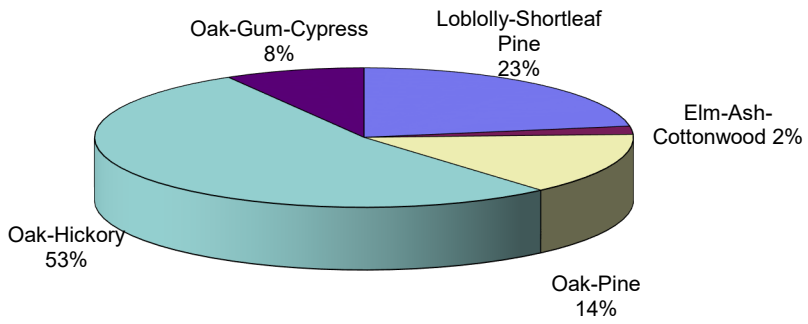
Oklahoma

Forest Health Highlights 2020

The Resource

Oklahoma's forests covers over 12 million acres, about 28% of the state's land area. Some 6.9 million acres of the states forested land is in nonindustrial private ownership, while 707,867 acres are in National Forests. Oklahoma's forests are prized for their scenic beauty, supporting tourism and outdoor recreation and providing wildlife habitat throughout the state. Major forest types in the state include oak-hickory, loblolly and shortleaf pine, mixed oak-pine, and oak-gum-cypress.

Table 1: Oklahoma Forest Type Distribution



Forest health monitoring (FHM) activities are cooperative efforts between the USDA Forest Service and the Oklahoma Department of Agriculture Forestry Services. The FHM program in Oklahoma includes regular aerial and ground surveys to detect forest damage.

Special Issues

Key issues which state and federal programs are addressing cooperatively include:

- Sustainable management of private forest lands
- Protection and development of urban and community forest resources
- Increasing participation by underserved citizens in forestry programs
- Update of Oklahoma's Gypsy Moth and Emerald Ash Borer Action Plans
- Education efforts on present and potential pests
- Utilizing the US Forest Service Forest Disturbance Monitor and ForWarn

Forest Influences

Southern pine beetle Aerial Detection:

Oklahoma Forestry Services flew for aerial detection over 800,000 acres in McCurtain, LeFlore, and Pushmataha counties. The purpose of the flight was to monitor the health of the forests as well as look for early indications of any major health problems. Early detection of southern pine beetle is the primary purpose of these flights, but other aspects are monitored as well such as other bark beetles, flooding induced mortality, and discoloration of hardwood species. A few individual spots were noted during the flights as potentially early stages of southern pine beetle infestation although ground trothing showed them to be small concentrations of *Ips* and black turpentine beetles.

Figure 1: A view from the plane during SPB Flights

Figure 2: OFS Forest Range Steve Scantling utilizing the DMSM program during SPB Flights

Ips engraver beetle:
The 2020 aerial flights showed minimal pine beetle activity. Other scattered occurrences of Ips were present but none that were severe. In 2015-2016 there was a major *Ips* outbreak across southeastern Oklahoma to a scale that was approaching that typical of southern pine beetle. This outbreak in 2015/2016 was likely the result of significant droughts while the following years were wetter resulting in less severe bark beetle activity.

Sudden oak death / ramorum blight
P. ramorum was discovered on some Rhododendron's in a nursery as well as some stock at a major retailer in Oklahoma in early spring of 2019. Further testing the following

summer discovered more instances of *P. ramorum* on roses at the same nursery. Continual monitoring of nursery stock continues, led by Oklahoma Consumer Protective Services with assistance from Oklahoma Forestry Services. At this point the disease has not been identified outside of nursery stock nor in any oak tree. However, due to its tendency to remain inconspicuous for two years it is unknown the current extent of this pathogen's presence in Oklahoma's oak dominated forests.

Gypsy moth:
USDA Animal and Plant Health Inspection Service (APHIS) had no positive samples collected in this year's survey.

Emerald ash borer:
The first positive identification of emerald ash borer occurred in October, 2016. The individual was found in a trap in Grove Oklahoma. There have been no more positive ID's to date. Oklahoma Forestry Services continues to work with cities and other agencies to introduce and implement an Emerald Ash Borer Action Plan. City centers and towns have adopted this action plan and adapted it to suit their individual circumstances, often times with the help of Oklahoma Forestry Services. Tulsa was the first to develop a city specific action plan while Oklahoma City continues to work on theirs. As a result of increased outreach, both by OFS as well as news outlets, private landowners have become more aware of their trees and forests and requested technical assistance in relation to their ash trees.

Oklahoma Forestry Services has taken over the emerald ash borer trapping program. With the aid of Oklahoma Consumer Protective Services OFS was able to provide trapping materials to partners throughout the eastern half of the state. Oklahoma's Tree City USA's and Oklahoma Department of Wildlife Conservation worked with OFS to select hang the traps in their cities/Wildlife Management Areas and monitor them throughout the year. No EAB specimens were found.

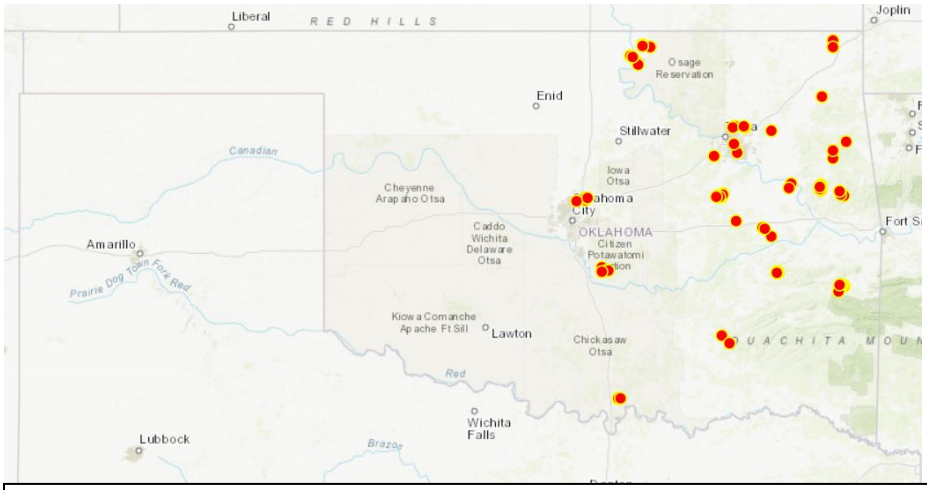


Figure 3: Locations of emerald ash borer traps spread throughout the native range of ash species in Oklahoma.

Sawmills Map:
Throughout Oklahoma, one of the major factors contributing to poor forest health is the lack of forest management. The forest type most impacted by the lack of management in Oklahoma is the Cross Timbers, but all of the forest types throughout the state suffer to some degree. Environmental factors such as the prolonged drought in 2011-2012 followed by shorter droughts since then have caused the forests that are already overstocked to decline. One of the reasons for lack of management, especially in central Oklahoma and away from the traditional timber markets, is the lack of timber buyers. OFS continues to locate new sawmills throughout the state, update the information on those already on record, and manage an interactive map of their locations in order to replace the paper directory.

Landowners can now view the area around them to find what sawmills exist, to learn what size and species the mills accept, and answer questions such as; will the sawmill purchase timber, cut timber, and pick up timber from site. Since many of these sawmills are small family operations, often times operating out of a barn, their presence was not as apparent as those in areas with traditional markets. The presence of this mills map has put in contact those with wood and those wanting to purchase timber, and as a result has begun to increase management on forests that were previously deemed unproductive.

This project works with multiple programs in Oklahoma Forestry Services including; Urban Forestry, Forest Health, Forest Stewardship, and Sustainable Utilization and Marketing. Recent projects from the Urban Forestry program in urban wood utilization have tied into this project by promoting utilization of single trees that needed to be removed for various reasons.

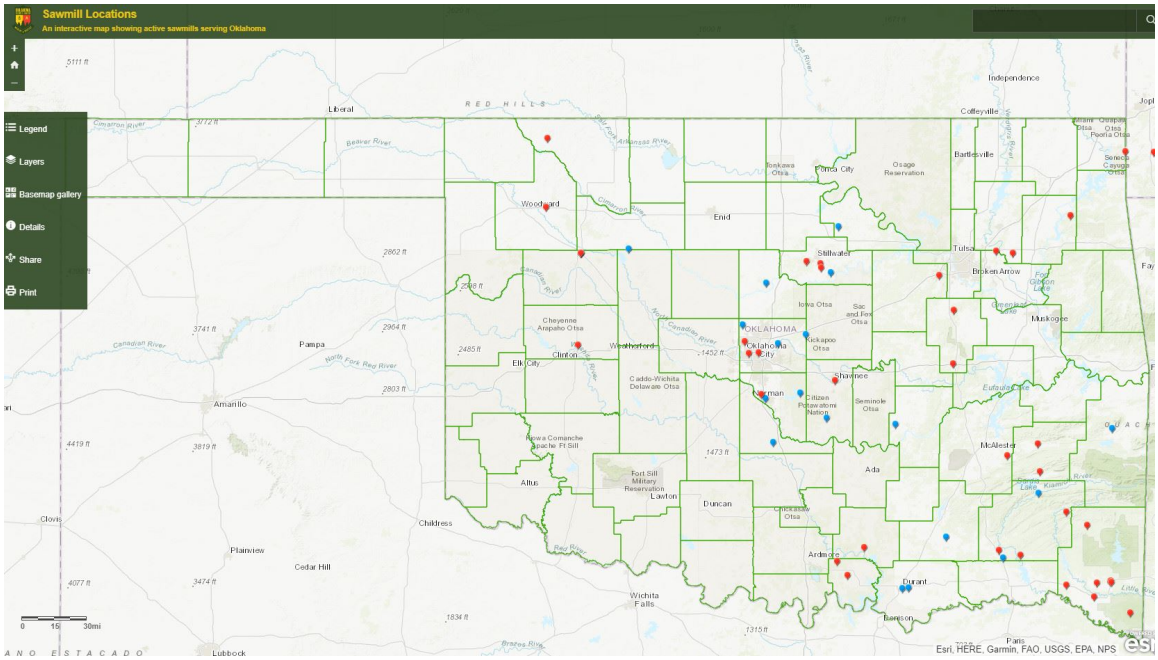


Figure 4: The Sawmills map for Oklahoma

Tree mortality from prolonged drought:
This continues to be a major influence affecting Oklahoma's forest health. Oklahoma's forests have shown signs of decline over the past couple of years as a result of the prolonged drought that occurred throughout 2011 and 2012 as well as flash droughts occurring in the years following. The species that are most affected are oaks, especially black oak and blackjack oak. Following the drought conditions Hypoxylon canker has set in thus exacerbating the problem.

Non-Native insects of concern

- Emerald Ash Borer
- Thousand Canker Disease (Walnut twig Beetle)
- Gypsy Moth
- Asian Long-Horn Beetle
- Asian Gypsy Moth
- Mexican soapberry borer

Increased education on forest health:
Oklahoma Forestry Services has put an increased emphasis on forest health education. OFS has used the initial detection of emerald ash borer and the increased public awareness to discuss the transportation of many of the forest pests listed above. Other causes of decline, such as drought induced mortality and overstocked forests have also been a focus when working with landowners, especially when in the Cross Timbers Forests of central Oklahoma.

Demonstration Areas:
Oklahoma Forestry Services have a couple formal demonstration areas scattered throughout the state. The one with the longest history of use is located on the Pushmataha Wildlife Management Area and has been used to demonstrate the effects of forest management in the forms of thinning and burn rotations. The area has multiple parcels of land with signage showing the outcome of different combinations of thinning and burn rotations allowing landowners to make more informed decisions on what practices they need to reach their end goals with the aid of visual representations.

The parcel of land behind the Broken Bow office in South East Oklahoma was established to demonstrate forest management. After ice storms in the early 2000's the area has become inundated with privet. OFS continues to work removing the established privet, preventing young shoots from reestablishing themselves, and utilizing the area to demonstrate invasive species management as well as sustainable forest management.

Figure 5: Area Forester Craig Marquardt pointing out signs of bark beetles at the Broken Bow Demonstration Area

There is also a demonstration area in North Central Oklahoma near OSU that focuses on eastern redcedar control and cross timbers management. Eastern redcedar has become a problem due to pasture/rangelands being abandoned becoming eastern redcedar dominated forests. These areas have then led to the shade tolerant eastern redcedar encroaching into the surrounding oak hickory forests and dominating the understory, outcompeting the less shade tolerant species native to that ecosystem.

Three new demonstration areas are in the works. The first at a community forest and campsite located in Ponca City, which is in North Central Oklahoma. The historic oak hickory forest type has been replaced with eastern red cedar in areas as a result of lack of fire in the ecosystem. The grassland areas are also being overtaken by johnsongrass. This area will provide an opportunity for the community to work together to promote the native ecosystem with the advice of OFS and then promote healthy forests and forest management to the school, boy scout, and girl scout groups that utilize the campsites.

The second area in development is focuses on tree-of-heaven in a number of the public forests and along a scenic highway which runs parallel to the Illinois River near Tahlequah, Oklahoma. These public forests and highway are highly visible areas with dense thickets of tree-of-heaven throughout. Working with a number of public and private organizations these areas can be used to promote the need for invasive species control as well as demonstrations for chemical applications in sensitive riparian areas.

The most recent demonstration area to begin establishment is at Turkey Mountain Urban Wilderness Area. Turkey Mountain is a forested park located in the Tulsa area. A few year ago the land was supposed to be developed. Public outcry saved the natural area and as a result the park was made. Continual support from the public has led to the area being selected for the Leave No Trace program. The community reached out to OFS for help with managing the forest as well as invasive species control. Unfortunately, due to Covid-19 much of the community led project was delayed until 2021 but plans remain to work on removing the privet, Johnsongrass, *Lespedeza*, and preventing eastern red cedar from getting to prevalent in the understory.

Forest Stewardship Program
There were 42 Stewardship Plans reported covering 10,833 acres, all of which included a section on Forest Health. Forest Health was discussed more in depth with the landowners while the plans were being written.

Oklahoma Pest Action Council
The Council is comprised of plant health specialist from Universities, Federal and State partners. It was primarily formed to produce a collaborative Emerald Ash Borer Preparedness Plan for Oklahoma.

Oklahoma's Forest Statistics

- Of the 50 states, Oklahoma ranks 20th in size, with an area of 43,954,560 acres, over 800,000 acres of which are covered by water and approximately 12,000,000 acres are covered by forests.

Table 2: Eastern Oklahoma, Area of Timberland (productive forest land) by Ownership Group

Area of timberland by forest-type and ownership group, East Oklahoma, 2008						
Forest-type	All ownerships	U.S. Forest Service	Other federal	State and local government	Forest industry	Nonindustrial private
		thousand acres				
Softwood types (Pines and other softwoods)	1096.8	159.2	51.1	28.9	350.6	507.0
Hardwood types (oak, elm, ash, hickory, etc.)	3971.0	98.3	244.0	135.2	214.8	3278.6
Nonstocked	35.3	0.0	1.4	0.0	2.9	31.0
All groups	5103.1	257.5	296.5	164.1	568.3	3816.6

Table 3: Oklahoma Forest and Paper Industry Employment and Annual Payroll Income

Oklahoma Wood-Related Sectors		
Sectors	**Employment**	**Annual Payroll Income**
Forestry & Logging	895	$31,562,000
Wood Products	4,075	$176,234,000
Pulp & Paper	2,943	$205,063,000
Furniture	2,788	$100,377,000
Total	10,701	$513,236,000

Table 4: Economic Impacts of Oklahoma's privately-Owned Forests

Forestry-Related Industries	**All Forests**	**Privately-owned Forests**
Employment	7,982	7,902
Payrolls	$300,343,142	$297,339,710
Annual Sales	$2,758,886,681	$2,731,297,815
Contribution to the State GDP	$1,068,876,000	$1,058,187,240

Source: Forest2Market, National Alliance of Forest Owners, 2009.